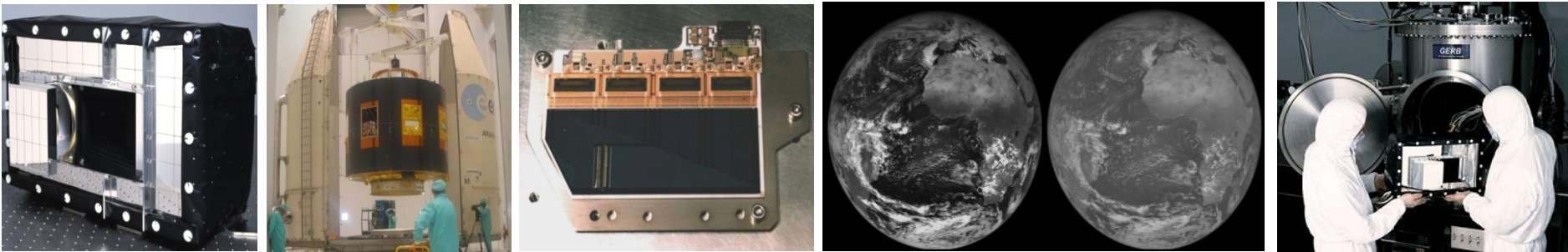


GERB Future Plans



Helen Brindley, Imperial College

Product development (priorities from GSAG)

Ed 1: BARG release & monthly averages

- Implementation of 'fill values' for missing 'glint' and 'twilight' fluxes and flag field to identify fill values
 - BARG release to include fill values
 - Required step to provide monthly averages – all sky directly derived from filled HR
 - Internal compression of HR – smaller unzipped product
 - Zero night-time SW fluxes
 - Other minor bug corrections
- SW clear sky field derived for ocean as part of filling, extend to enable clear sky monthly average
- Note that plan is also to release GERB HR (with additional cautions)
- DQ summaries and product descriptions required

Product development (priorities from GSAG)

Contribute GERB products to Obs4MIPs Project
(optimise product uptake)

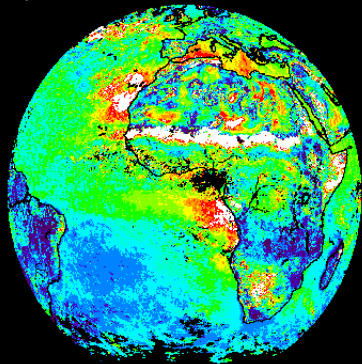
- In discussion with Obs4MIPs team (Waliser): will provide filled BARG at daily/monthly resolution; likely higher temporal resolution if possible within Obs4MIPs constraints
- Requires demand from modelling centres for higher res products (UKMO/Hadley Centre already supportive)
- Processing into required format will be led by RAL GERB team

Product development (priorities from GSAG)

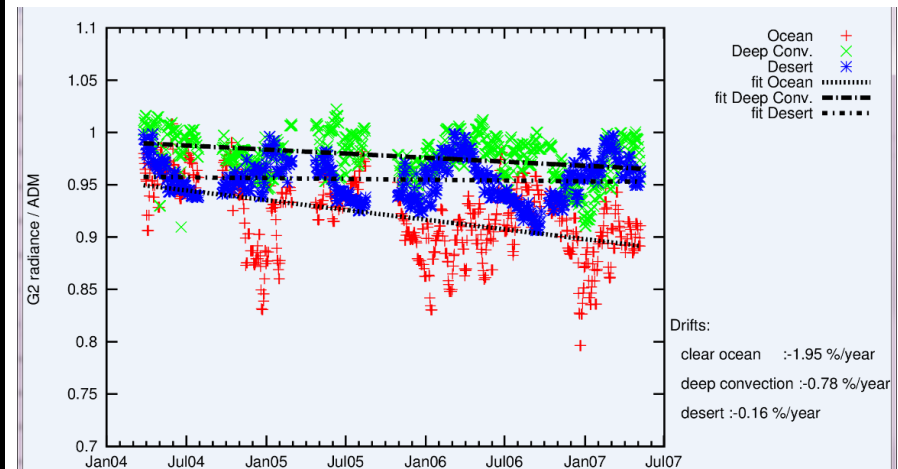
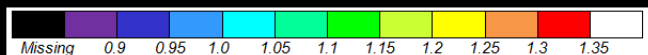
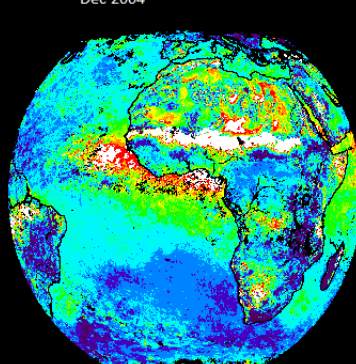
Ed 2: Planned priority updates

- Calibration updates to unify and stabilise calibration through record (requires further studies)
- Aerosol over ocean correction planned implementation (requires testing)
- Improve ocean wind speed ADM selection to use ERA for reprocessing
- Move to effective radiance through record for consistency
- Updated LW radiance to flux developed, tested and awaiting implementation

GERB/TRMM albedo ratio SZA: 40 to 70
July 2004



GERB/TRMM albedo ratio SZA: 40 to 70
Dec 2004



LW ADM Development (Almudena Velazquez)

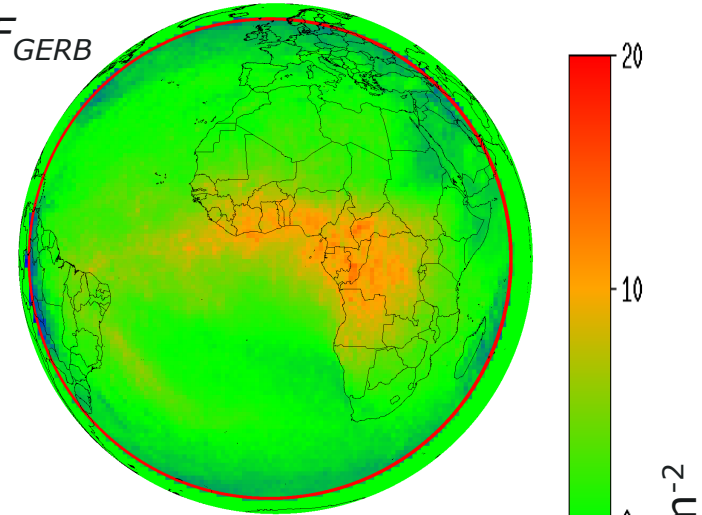
- Anisotropic Factors, $R(\theta)$ are estimated from theoretical simulated thermal radiances and fluxes based on 'split-window' approach

$$z_1 = BT_{10.8} \quad z_2 = BT_{12.0} - BT_{10.8} \quad a_i = f(\theta)$$

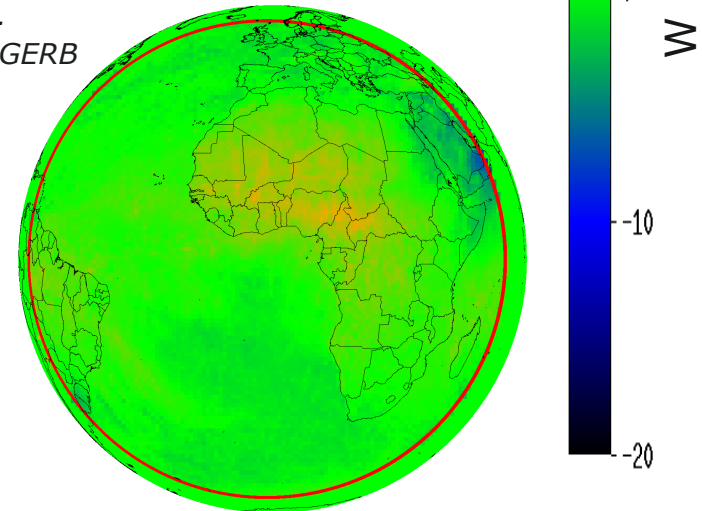
$$R(\theta) = a_0 + a_1 \cdot z_1 + a_2 \cdot z_2 + a_3 \cdot z_1^2 + a_4 \cdot z_1 \cdot z_2 + a_5 \cdot z_2^2$$

- Anisotropy models are developed every 5° in VZA in overlapping bins of $20 \text{ Wm}^{-2}\text{sr}^{-1}$
- A large database of radiance and flux simulations is used:
 - SITS LibRadtran 1.4 database of 12366 scenes (540 clear sky)
 - GERB SBDART database of 2311 scenes (only clear sky)
- Implementation in the EarthCARE BBR LW processor is on going

$F_{\text{CERES}} - F_{\text{GERB}}$
Ed-1



$F_{\text{CERES}} - F_{\text{GERB}}$
Ed-2
(prov)



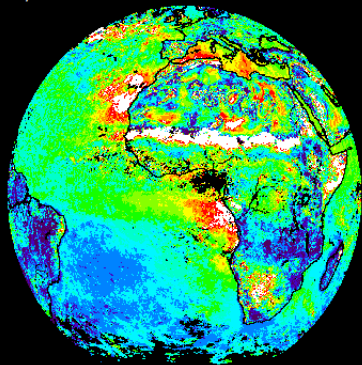
March 04

Product development (priorities from GSAG)

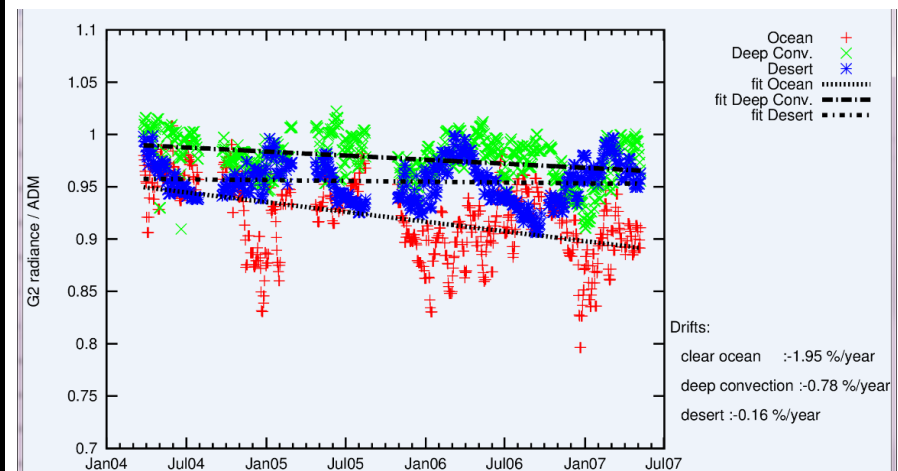
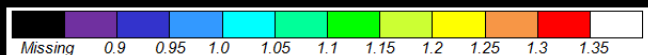
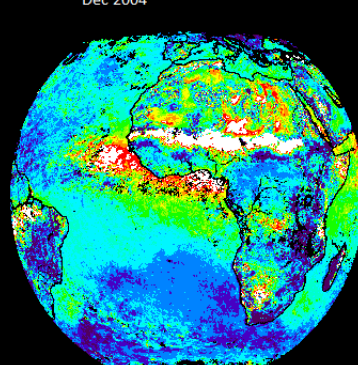
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- Improvements to scene ID (cloud retrieval)

GERB/TRMM albedo ratio SZA: 40 to 70
July 2004



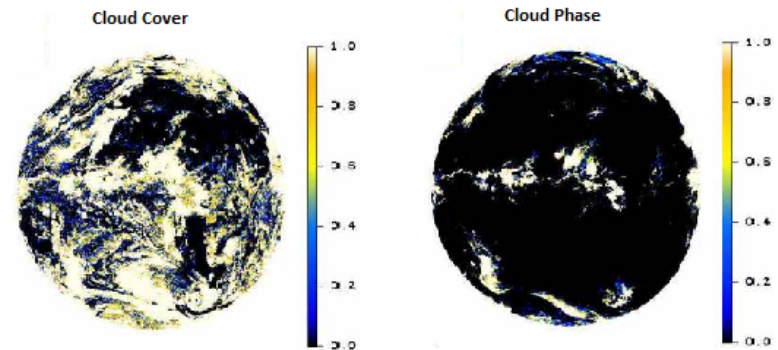
GERB/TRMM albedo ratio SZA: 40 to 70
Dec 2004



Scene ID (Alessandro Ipe)

New $\rho \rightarrow \tau$ LUTs for SEVIRI 0.6 & 0.8 μm

- Uses LibRadtran v1.7
- Generated at ECMWF (2-3 weeks instead of 8 months)
- Using 96 streams to avoid bug in Legendre expansion
- τ values of up to 400
- Parameterized according to surface albedo
- No more negative reflectances!



Tuesday 29th May 2001 - 12h00 UTC

To Do

- Integrate LUTs in processing code
- Perform comparisons between scene IDs obtained using ED1 and ED2 LUTs
- Validation with CERES cloud products at 3km and every 15min:
 - » 4 weeks across 2011 selected: Feb May Aug Nov 1-7
 - » awaiting CERES SEVIRI cloud products
 - » potential to use Doelling hourly geo clouds instead/initially?

Data 2013 – GERB 4?

Need to find a solution to fill missing GERB3 period.

- Adjust processing to use MSG3 SEVIRI (0°) with GERB 1 filtered radiances (9.5°E)
 - Provides best link to existing GERB record
 - Risk of failure of G1 increases with time
 - 9.5° viewing difference likely to affect quality of geolocation, effect on unfiltering TBD, radiance to flux needs to be adjusted for